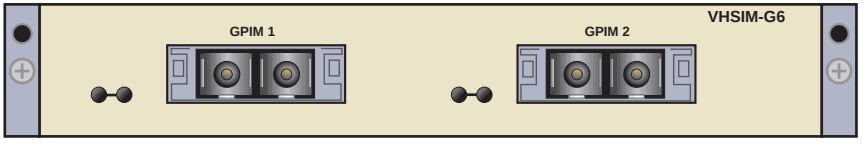
VHSIM-G6
User's Guide



9032549-03

CABLETRON SYSTEMS

Only qualified personnel should perform installation procedures.

NOTICE

Cabletron Systems reserves the right to make changes in specifications and other information contained in this document without prior notice. The reader should in all cases consult Cabletron Systems to determine whether any such changes have been made.

The hardware, firmware, or software described in this manual is subject to change without notice.

IN NO EVENT SHALL CABLETRON SYSTEMS BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING BUT NOT LIMITED TO LOST PROFITS) ARISING OUT OF OR RELATED TO THIS MANUAL OR THE INFORMATION CONTAINED IN IT, EVEN IF CABLETRON SYSTEMS HAS BEEN ADVISED OF, KNOWN, OR SHOULD HAVE KNOWN, THE POSSIBILITY OF SUCH DAMAGES.

Cabletron Systems, Inc.
35 Industrial Way
Rochester, NH 03867

© 1999 by Cabletron Systems, Inc.
All Rights Reserved
Printed in the United States of America

Order Number: 9032549-03 June 1999

Cabletron Systems, **SPECTRUM**, and **LANVIEW** are registered trademarks and **SmartSwitch** is a trademark of Cabletron Systems, Inc.

All other product names mentioned in this manual may be trademarks or registered trademarks of their respective companies.

FCC NOTICE

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment uses, generates, and can radiate radio frequency energy and if not installed in accordance with the operator's manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

WARNING: Changes or modifications made to this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

INDUSTRY CANADA NOTICE

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

VCCI NOTICE

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

この装置は，情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

CABLETRON SYSTEMS, INC.
PROGRAM LICENSE AGREEMENT

IMPORTANT: THIS LICENSE APPLIES FOR USE OF PRODUCT IN THE FOLLOWING GEOGRAPHICAL REGIONS:

CANADA
MEXICO
CENTRAL AMERICA
SOUTH AMERICA

BEFORE OPENING OR UTILIZING THE ENCLOSED PRODUCT, CAREFULLY READ THIS LICENSE AGREEMENT.

This document is an agreement ("Agreement") between You, the end user, and Cabletron Systems, Inc. ("Cabletron") that sets forth your rights and obligations with respect to the Cabletron software program ("Program") in the package. The Program may be contained in firmware, chips or other media. UTILIZING THE ENCLOSED PRODUCT, YOU ARE AGREEING TO BECOME BOUND BY THE TERMS OF THIS AGREEMENT, WHICH INCLUDES THE LICENSE AND THE LIMITATION OF WARRANTY AND DISCLAIMER OF LIABILITY. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, RETURN THE UNOPENED PRODUCT TO CABLETRON OR YOUR DEALER, IF ANY, WITHIN TEN (10) DAYS FOLLOWING THE DATE OF RECEIPT FOR A FULL REFUND.

IF YOU HAVE ANY QUESTIONS ABOUT THIS AGREEMENT, CONTACT CABLETRON SYSTEMS +1-603-332-9400. Attn: Legal Department.

1. LICENSE. You have the right to use only the one (1) copy of the Program provided in this package subject to the terms and conditions of this License Agreement.

You may not copy, reproduce or transmit any part of the Program except as permitted by the Copyright Act of the United States or as authorized in writing by Cabletron.

2. OTHER RESTRICTIONS. You may not reverse engineer, decompile, or disassemble the Program.

3. APPLICABLE LAW. This License Agreement shall be interpreted and governed under the laws and in the state and federal courts of New Hampshire. You accept the personal jurisdiction and venue of the New Hampshire courts.

4. EXPORT REQUIREMENTS. You understand that Cabletron and its Affiliates are subject to regulation by agencies of the U.S. Government, including the U.S. Department of Commerce, which prohibit export or diversion of certain technical products to certain countries, unless a license to export the product is obtained from the U.S. Government or an exception from obtaining such license may be relied upon by the exporting party.

If the Program is exported from the United States pursuant to the License Exception CIV under the U.S. Export Administration Regulations, You agree that You are a civil end user of the Program and agree that You will use the Program for civil end uses only and not for military purposes.

If the Program is exported from the United States pursuant to the License Exception TSR under the U.S. Export Administration Regulations, in addition to the restriction on transfer set forth in Sections 1 or 2 of this Agreement, You agree not to (i) reexport or release the Program, the source code for the Program or technology to a national of a country in Country Groups D:1 or E:2 (Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Cambodia, Cuba, Estonia, Georgia, Iraq, Kazakhstan, Kyrgyzstan, Laos, Latvia, Libya, Lithuania, Moldova, North Korea, the People's Republic of China, Romania, Russia, Rwanda, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, Vietnam, or such other countries as may be designated by the United States Government), (ii) export to Country Groups D:1 or E:2 (as defined herein) the direct product of the Program or the technology, if such foreign produced direct product is subject to national security controls as identified on the U.S. Commerce Control List, or (iii) if the direct product of the technology is a complete plant o r any major component of a plant, export to Country Groups D:1 or E:2 the direct product of the plant or a major component thereof, if such foreign produced direct product is subject to national security controls as identified on the U.S. Commerce Control List or is subject to State Department controls under the U.S. Munitions List.

5. UNITED STATES GOVERNMENT RESTRICTED RIGHTS. The enclosed Product (i) was developed solely at private expense; (ii) contains "restricted computer software" submitted with restricted rights in accordance with section 52.227-19 (a) through (d) of the Commercial Computer Software-Restricted Rights Clause and its successors, and (iii) in all respects is proprietary data belonging to Cabletron and/or its suppliers. For Department of Defense units, the Product is considered commercial computer software in accordance with DFARS section 227.7202-3 and its successors, and use, duplication, or disclosure by the Government is subject to restrictions set forth herein.

6. EXCLUSION OF WARRANTY. Except as may be specifically provided by Cabletron in writing, Cabletron makes no warranty, expressed or implied, concerning the Program (including its documentation and media).

CABLETRON DISCLAIMS ALL WARRANTIES, OTHER THAN THOSE SUPPLIED TO YOU BY CABLETRON IN WRITING, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PROGRAM, THE ACCOMPANYING WRITTEN MATERIALS, AND ANY ACCOMPANYING HARDWARE.

7. NO LIABILITY FOR CONSEQUENTIAL DAMAGES. IN NO EVENT SHALL CABLETRON OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS, PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR RELIANCE DAMAGES, OR OTHER LOSS) ARISING OUT OF THE USE OR INABILITY TO USE THIS CABLETRON PRODUCT, EVEN IF CABLETRON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, OR IN THE DURATION OR LIMITATION OF IMPLIED WARRANTIES IN SOME INSTANCES, THE ABOVE LIMITATION AND EXCLUSIONS MAY NOT APPLY TO YOU.

CABLETRON SYSTEMS SALES AND SERVICE, INC. PROGRAM LICENSE AGREEMENT

IMPORTANT: THIS LICENSE APPLIES FOR USE OF PRODUCT IN THE UNITED STATES OF AMERICA AND BY UNITED STATES OF AMERICA GOVERNMENT END USERS.

BEFORE OPENING OR UTILIZING THE ENCLOSED PRODUCT, CAREFULLY READ THIS LICENSE AGREEMENT.

This document is an agreement ("Agreement") between You, the end user, and Cabletron Systems Sales and Service, Inc. ("Cabletron") that sets forth your rights and obligations with respect to the Cabletron software program ("Program") in the package. The Program may be contained in firmware, chips or other media. UTILIZING THE ENCLOSED PRODUCT, YOU ARE AGREEING TO BECOME BOUND BY THE TERMS OF THIS AGREEMENT, WHICH INCLUDES THE LICENSE AND THE LIMITATION OF WARRANTY AND DISCLAIMER OF LIABILITY. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, RETURN THE UNOPENED PRODUCT TO CABLETRON OR YOUR DEALER, IF ANY, WITHIN TEN (10) DAYS FOLLOWING THE DATE OF RECEIPT FOR A FULL REFUND.

IF YOU HAVE ANY QUESTIONS ABOUT THIS AGREEMENT, CONTACT CABLETRON SYSTEMS +1-603-332-9400. Attn: Legal Department.

1. LICENSE. You have the right to use only the one (1) copy of the Program provided in this package subject to the terms and conditions of this License Agreement.

You may not copy, reproduce or transmit any part of the Program except as permitted by the Copyright Act of the United States or as authorized in writing by Cabletron.

2. OTHER RESTRICTIONS. You may not reverse engineer, decompile, or disassemble the Program.

3. APPLICABLE LAW. This License Agreement shall be interpreted and governed under the laws and in the state and federal courts of New Hampshire. You accept the personal jurisdiction and venue of the New Hampshire courts.

4. EXPORT REQUIREMENTS. You understand that Cabletron and its Affiliates are subject to regulation by agencies of the U.S. Government, including the U.S. Department of Commerce, which prohibit export or diversion of certain technical products to certain countries, unless a license to export the product is obtained from the U.S. Government or an exception from obtaining such license may be relied upon by the exporting party.

If the Program is exported from the United States pursuant to the License Exception CIV under the U.S. Export Administration Regulations, You agree that You are a civil end user of the Program and agree that You will use the Program for civil end uses only and not for military purposes.

If the Program is exported from the United States pursuant to the License Exception TSR under the U.S. Export Administration Regulations, in addition to the restriction on transfer set forth in Sections 1 or 2 of this Agreement, You agree not to (i) reexport or release the Program, the source code for the Program or technology to a national of a country in Country Groups D:1 or E:2 (Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Cambodia, Cuba, Estonia, Georgia, Iraq, Kazakhstan, Kyrgyzstan, Laos, Latvia, Libya, Lithuania, Moldova, North Korea, the People's Republic of China, Romania, Russia, Rwanda, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, Vietnam, or such other countries as may be designated by the United States Government), (ii) export to Country Groups D:1 or E:2 (as defined herein) the direct product of the Program or the technology, if such foreign produced direct product is subject to national security controls as identified on the U.S. Commerce Control List, or (iii) if the direct product of the technology is a complete plant o r any major component of a plant, export to Country Groups D:1 or E:2 the direct product of the plant or a major component thereof, if such foreign produced direct product is subject to national security controls as identified on the U.S. Commerce Control List or is subject to State Department controls under the U.S. Munitions List.

5. UNITED STATES GOVERNMENT RESTRICTED RIGHTS. The enclosed Product (i) was developed solely at private expense; (ii) contains "restricted computer software" submitted with restricted rights in accordance with section 52.227-19 (a) through (d) of the Commercial Computer Software-Restricted Rights Clause and its successors, and (iii) in all respects is proprietary data belonging to Cabletron and/or its suppliers. For Department of Defense units, the Product is considered commercial computer software in accordance with DFARS section 227.7202-3 and its successors, and use, duplication, or disclosure by the Government is subject to restrictions set forth herein.

6. EXCLUSION OF WARRANTY. Except as may be specifically provided by Cabletron in writing, Cabletron makes no warranty, expressed or implied, concerning the Program (including its documentation and media).

CABLETRON DISCLAIMS ALL WARRANTIES, OTHER THAN THOSE SUPPLIED TO YOU BY CABLETRON IN WRITING, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PROGRAM, THE ACCOMPANYING WRITTEN MATERIALS, AND ANY ACCOMPANYING HARDWARE.

7. NO LIABILITY FOR CONSEQUENTIAL DAMAGES. IN NO EVENT SHALL CABLETRON OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS, PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR RELIANCE DAMAGES, OR OTHER LOSS) ARISING OUT OF THE USE OR INABILITY TO USE THIS CABLETRON PRODUCT, EVEN IF CABLETRON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, OR IN THE DURATION OR LIMITATION OF IMPLIED WARRANTIES IN SOME INSTANCES, THE ABOVE LIMITATION AND EXCLUSIONS MAY NOT APPLY TO YOU.

CABLETRON SYSTEMS LIMITED
PROGRAM LICENSE AGREEMENT

IMPORTANT: THIS LICENSE APPLIES FOR THE USE OF THE PRODUCT IN THE FOLLOWING GEOGRAPHICAL REGIONS:

EUROPE
MIDDLE EAST
AFRICA
ASIA
AUSTRALIA
PACIFIC RIM

BEFORE OPENING OR UTILIZING THE ENCLOSED PRODUCT, CAREFULLY READ THIS LICENSE AGREEMENT.

This document is an agreement ("Agreement") between You, the end user, and Cabletron Systems Limited ("Cabletron") that sets forth your rights and obligations with respect to the Cabletron software program ("Program") in the package. The Program may be contained in firmware, chips or other media. UTILIZING THE ENCLOSED PRODUCT, YOU ARE AGREEING TO BECOME BOUND BY THE TERMS OF THIS AGREEMENT, WHICH INCLUDES THE LICENSE AND THE LIMITATION OF WARRANTY AND DISCLAIMER OF LIABILITY. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, RETURN THE UNOPENED PRODUCT TO CABLETRON OR YOUR DEALER, IF ANY, WITHIN TEN (10) DAYS FOLLOWING THE DATE OF RECEIPT FOR A FULL REFUND.

IF YOU HAVE ANY QUESTIONS ABOUT THIS AGREEMENT, CONTACT CABLETRON SYSTEMS +1-603-332-9400. Attn: Legal Department.

1. LICENSE. You have the right to use only the one (1) copy of the Program provided in this package subject to the terms and conditions of this License Agreement.

You may not copy, reproduce or transmit any part of the Program except as permitted by the Copyright Act of the United States or as authorized in writing by Cabletron.

2. OTHER RESTRICTIONS. You may not reverse engineer, decompile, or disassemble the Program.

3. APPLICABLE LAW. This License Agreement shall be governed in accordance with English law. The English courts shall have exclusive jurisdiction in the event of any disputes.

4. EXPORT REQUIREMENTS. You understand that Cabletron and its Affiliates are subject to regulation by agencies of the U.S. Government, including the U.S. Department of Commerce, which prohibit export or diversion of certain technical products to certain countries, unless a license to export the product is obtained from the U.S. Government or an exception from obtaining such license may be relied upon by the exporting party.

If the Program is exported from the United States pursuant to the License Exception CIV under the U.S. Export Administration Regulations, You agree that You are a civil end user of the Program and agree that You will use the Program for civil end uses only and not for military purposes.

If the Program is exported from the United States pursuant to the License Exception TSR under the U.S. Export Administration Regulations, in addition to the restriction on transfer set forth in Sections 1 or 2 of this Agreement, You agree not to (i) reexport or release the Program, the source code for the Program or technology to a national of a country in Country Groups D:1 or E:2 (Albania, Armenia, Azerbaijan, Belarus, Bulgaria, Cambodia, Cuba, Estonia, Georgia, Iraq, Kazakhstan, Kyrgyzstan, Laos, Latvia, Libya, Lithuania, Moldova, North Korea, the People's Republic of China, Romania, Russia, Rwanda, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, Vietnam, or such other countries as may be designated by the United States Government), (ii) export to Country Groups D:1 or E:2 (as defined herein) the direct product of the Program or the technology, if such foreign produced direct product is subject to national security controls as identified on the U.S. Commerce Control List, or (iii) if the direct product of the technology is a complete plant o r any major component of a plant, export to Country Groups D:1 or E:2 the direct product of the plant or a major component thereof, if such foreign produced direct product is subject to national security controls as identified on the U.S. Commerce Control List or is subject to State Department controls under the U.S. Munitions List.

5. UNITED STATES GOVERNMENT RESTRICTED RIGHTS. The enclosed Product (i) was developed solely at private expense; (ii) contains "restricted computer software" submitted with restricted rights in accordance with section 52.227-19 (a) through (d) of the Commercial Computer Software-Restricted Rights Clause and its successors, and (iii) in all respects is proprietary data belonging to Cabletron and/or its suppliers. For Department of Defense units, the Product is considered commercial computer software in accordance with DFARS section 227.7202-3 and its successors, and use, duplication, or disclosure by the Government is subject to restrictions set forth herein.

6. EXCLUSION OF WARRANTY. Except as may be specifically provided by Cabletron in writing, Cabletron makes no warranty, expressed or implied, concerning the Program (including its documentation and media).

CABLETRON DISCLAIMS ALL WARRANTIES, OTHER THAN THOSE SUPPLIED TO YOU BY CABLETRON IN WRITING, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PROGRAM, THE ACCOMPANYING WRITTEN MATERIALS, AND ANY ACCOMPANYING HARDWARE.

7. NO LIABILITY FOR CONSEQUENTIAL DAMAGES. IN NO EVENT SHALL CABLETRON OR ITS SUPPLIERS BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS, PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR RELIANCE DAMAGES, OR OTHER LOSS) ARISING OUT OF THE USE OR INABILITY TO USE THIS CABLETRON PRODUCT, EVEN IF CABLETRON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, OR IN THE DURATION OR LIMITATION OF IMPLIED WARRANTIES IN SOME INSTANCES, THE ABOVE LIMITATION AND EXCLUSIONS MAY NOT APPLY TO YOU.

SAFETY INFORMATION

CLASS 1 LASER TRANSCEIVERS

THE GPIM-01 AND GPIM-09 GIGABIT ETHERNET INTERFACE MODULES USE CLASS 1 LASER TRANSCEIVERS. READ THE FOLLOWING SAFETY INFORMATION BEFORE INSTALLING OR OPERATING THESE MODULES.

The Class 1 laser transceivers use an optical feedback loop to maintain Class 1 operation limits. This control loop eliminates the need for maintenance checks or adjustments. The output is factory set, and does not allow any user adjustment. Class 1 Laser transceivers comply with the following safety standards:

- 21 CFR 1040.10 and 1040.11 U.S. Department of Health and Human Services (FDA).
- IEC Publication 825 (International Electrotechnical Commission).
- CENELEC EN 60825 (European Committee for Electrotechnical Standardization).

When operating within their performance limitations, laser transceiver output meets the Class 1 accessible emission limit of all three standards. Class 1 levels of laser radiation are not considered hazardous.

SAFETY INFORMATION

CLASS 1 LASER TRANSCEIVERS

LASER RADIATION AND CONNECTORS

When the connector is in place, all laser radiation remains within the fiber. The maximum amount of radiant power exiting the fiber (under normal conditions) is -12.6 dBm or 55 x 10^{-6} watts.

Removing the optical connector from the transceiver allows laser radiation to emit directly from the optical port. The maximum radiance from the optical port (under worst case conditions) is 0.8 W cm^{-2} or 8 x 10^{3} W m^{2} sr-1.

Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

DECLARATION OF CONFORMITY

Application of Council Directive(s):	**89/336/EEC** **73/23/EEC**
Manufacturer's Name:	**Cabletron Systems, Inc.**
Manufacturer's Address:	**35 Industrial Way** **PO Box 5005** **Rochester, NH 03867**
European Representative Name:	**Mr. J. Solari**
European Representative Address:	**Cabletron Systems Limited** **Nexus House, Newbury Business Park** **London Road, Newbury** **Berkshire RG14 2PZ, England**
Conformance to Directive(s)/Product Standards:	**EC Directive 89/336/EEC** **EC Directive 73/23/EEC** **EN 55022** **EN 50082-1** **EN 60950**
Equipment Type/Environment:	**Networking Equipment, for use in a Commercial or Light Industrial Environment.**

We the undersigned, hereby declare, under our sole responsibility, that the equipment packaged with this notice conforms to the above directives.

Manufacturer	Legal Representative in Europe
Mr. Ronald Fotino	Mr. J. Solari
Full Name	Full Name
Compliance Engineering Manager	Managing Director - E.M.E.A.
Title	Title
Rochester, NH, USA	Newbury, Berkshire, England
Location	Location

CONTENTS

FIGURES xiii
TABLES xiv

CHAPTER 1 INTRODUCTION

1.1 Structure of this Guide 1-2
1.2 Overview 1-2
1.2.1 Connectivity 1-3
1.2.2 LANVIEW Diagnostic LEDs 1-3
1.2.3 Options 1-3
1.3 Document Conventions 1-4
1.4 Related Documentation 1-4
1.5 Getting Help 1-5

CHAPTER 2 INSTALLATION

2.1 Unpacking the VHSIM-G6 2-1
2.2 Installing the VHSIM-G6 2-2
2.2.1 Installing the VHSIM-G6 in an Interface Module 2-2
2.2.2 Installing the VHSIM-G6 in a Standalone Device 2-5
2.3 Installing GPIMs 2-6
2.4 GPIM-01 and GPIM-09 Network Connections 2-8
2.4.1 GPIM-09 Connection Using Multimode Cable 2-9
2.4.2 VHSIM-G6 Network Connection 2-10

CHAPTER 3 LANVIEW LEDs

3.1 LED Descriptions 3-1
3.2 Redundancy 3-2

CHAPTER 4 LOCAL MANAGEMENT

4.1 Requirements 4-1
4.2 Gigabit Port Mode 4-1

APPENDIX A VHSIM-G6 SPECIFICATIONS

A.1 Physical and Environmental Specifications A-1
A.2 Regulatory Compliance..... A-1

APPENDIX B GPIM SPECIFICATIONS

B.1 Gigabit Ethernet Specifications..... B-1
B.1.1 GPIM-01 Specifications (1000Base-SX)..... B-1
B.1.2 GPIM-09 Specifications (1000Base-LX)..... B-2
B.2 Physical and Environmental Specifications B-3
B.3 Regulatory Compliance..... B-3

FIGURES

Figure		Page
1-1	VHSIM-G6 (shown with fiber GPIMs)	1-1
2-1	Removing the VHSIM Coverplate from the Host Device	2-3
2-2	Installing the VHSIM-G6 in the Host Device	2-4
2-3	GPIM	2-7
2-4	Installing a GPIM into the VHSIM-G6	2-8
2-5	VHSIM-G6 Fiber Port Designations	2-8
2-6	GPIM-09 Launch Mode Conditioning Cable Connection	2-10
2-7	Fiber GPIM Connections	2-11
2-8	VHSIM-G6 with Two Fiber Ports	2-12
3-1	LANVIEW LEDs on the VHSIM-G6	3-1

TABLES

Table		Page
1-1	GPIM Options	1-3
3-1	VHSIM-G6 LED Functionality	3-2
A-1	Physical Properties of the VHSIM-G6	A-1
A-2	Environmental Requirements of the VHSIM-G6	A-1
A-3	Regulatory Compliance of the VHSIM-G6	A-1
B-2	GPIM-01 Operating Range	B-1
B-1	GPIM-01 Optical Specifications	B-1
B-4	GPIM-09 Operating Range	B-2
B-3	GPIM-09 Optical Specifications	B-2
B-5	GPIM Physical Properties	B-3
B-6	GPIM Environmental Requirements	B-3
B-7	Regulatory Compliance	B-3

CHAPTER 1
INTRODUCTION

Welcome to the Cabletron Systems **VHSIM-G6 User's Guide**. This manual describes the VHSIM-G6 and provides information concerning features, installation, troubleshooting, information on Local Management, and specifications for the VHSIM-G6 (Very High Speed Interface Module).

A general working knowledge of Gigabit Ethernet and IEEE 802.3z type data communications networks and their physical layer components is helpful when installing the VHSIM-G6.

The VHSIM-G6 (Figure 1-1) has two Gigabit Ethernet Port Interface Module (GPIM) ports that provide Gigabit Ethernet connections. The GPIMs are hot swappable, allowing the user to reconfigure the VHSIM-G6 when it is installed and the host platform has power applied to it. There are two modes of operation for the VHSIM-G6. In one mode, both GPIM ports are active at the same time. In the other mode, one port is active and the other is redundant, where redundancy is triggered based on link activity, and GPIM 1 is the active port by default. The default mode for the VHSIM-G6 is redundancy.

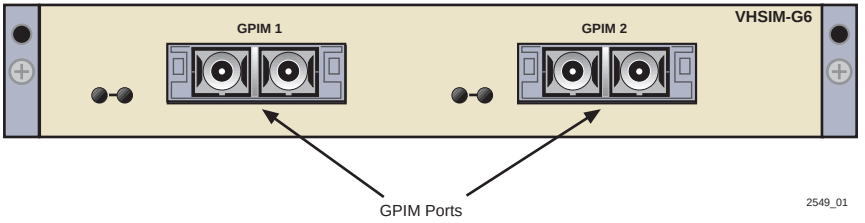


Figure 1-1 VHSIM-G6 (shown with fiber GPIMs)

NOTE

The acronym "GPIM" stands for Gigabit (Ethernet) Port Interface Module. In this manual, GPIM is used to designate any type of GPIM. When referring to a specific GPIM, the specific name is used, e.g., GPIM-01.

The term "host platform" may be used to refer to the module or standalone device in which the VHSIM-G6 may be installed.

1.1 STRUCTURE OF THIS GUIDE

Read through this manual completely to familiarize yourself with its content and to gain an understanding of the features and capabilities of the VHSIM-G6. The following list provides an overview of each section of this manual:

Chapter 1, **Introduction**, outlines the contents of this manual, describes the VHSIM-G6 features and concludes with a web site address where related manuals can be obtained.

Chapter 2, **Installation**, describes how to install a VHSIM-G6 into an interface module or a standalone device.

Chapter 3, **LANVIEW LEDs**, describes how to use the VHSIM-G6 LEDs to monitor performance and status.

Chapter 4, **Local Management**, gives information on Local Management for the VHSIM-G6.

Appendix A, **VHSIM-G6 Specifications**, lists the operating specifications and regulatory compliance for the VHSIM-G6.

Appendix B, **GPIM Specifications**, lists the operating specifications and regulatory compliance for the GPIMs.

1.2 OVERVIEW

The VHSIM-G6 has two ports that support Gigabit Ethernet Port Interface Modules (GPIMs), which allow the user to make fiber connections to Gigabit Ethernet networks. Available GPIMs include the GPIM-01, for multimode fiber support, and the GPIM-09, for multimode or single mode fiber support.

The VHSIM-G6 extends the functionality of various Cabletron Systems interface modules or standalone devices by providing high-speed uplink capability through Gigabit Ethernet technology. VHSIM-G6 features include the following:

- Customized configuration of GPIMs
- RMON support (Statistics, History, Alarms, Events)
- Management
- Flow control (802.3z)

1.2.1 Connectivity

The VHSIM-G6 supports two modes of operation for the Gigabit interfaces. One mode is that the VHSIM-G6 supports one active and one redundant Gigabit Ethernet Interface Module (GPIM). The other mode is that both of the interfaces can be active at the same time. The VHSIM-G6 supports the interfaces with two different hot-swappable GPIMs, providing connectivity to Gigabit Ethernet using fiber. Any combination of GPIMs can be installed in the two VHSIM-G6 ports.

The VHSIM-G6 module supports the 1000Base-SX and 1000Base-LX specifications using the GPIMs. 1000Base-SX is supported with the GPIM-01 providing one SC fiber optic connector for 50 or 62.5 micron multimode fiber optic cable. 1000Base-LX is supported with the GPIM-09 providing one SC fiber optic connector for 50 or 62.5 micron multimode fiber optic cable, or 10 micron single mode fiber optic cable. For more specifications on GPIMs, see Appendix B.

The VHSIM-G6 operates in full duplex mode, and follows the 802.3x specifications for auto-negotiation.

1.2.2 LANVIEW Diagnostic LEDs

Cabletron Systems provides a visual diagnostic and monitoring system called LANVIEW. The VHSIM-G6 LANVIEW LEDs help you quickly identify transmit, receive, and link status. Chapter 3 provides information on the VHSIM-G6 LEDs.

1.2.3 Options

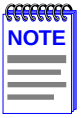
The options for the VHSIM-G6 are GPIMs, as listed in Table 1-1.

Table 1-1 GPIM Options

Part Number	Description	Application
GPIM-01	SC fiber connector	Supports 50 or 62.5 micron multimode fiber.
GPIM-09	SC fiber connector	Supports single mode (10 micron) or multimode (50 or 62.5 micron) fiber.

1.3 DOCUMENT CONVENTIONS

The following conventions are used throughout this document:



Note symbol. Calls the reader's attention to any item of information that may be of special importance.

Caution symbol. Contains information essential to avoid damage to the equipment.

Electrical Hazard Warning symbol. Warns against an action that could result in personal injury or death due to an electrical hazard.

1.4 RELATED DOCUMENTATION

The documentation for the host platform in which the VHSIM-G6 is to be installed, whether standalone device or module, provides additional information about the setup of the VHSIM-G6. This user's guide references procedures in these documents, where appropriate, but does not repeat them.

Documents can be obtained on the World Wide Web in Adobe Acrobat Portable Document Format (PDF) at the following site:

http://www.cabletron.com/

1.5 GETTING HELP

For additional support related to this device or document, contact Cabletron Systems using one the following methods.

World Wide Web	http://www.cabletron.com/
Phone	(603) 332-9400
Internet mail	support@cabletron.com
FTP Login Password	ftp://ftp.cabletron.com/ *anonymous* *your email address*
To send comments or suggestions concerning this document, contact the Cabletron Systems Technical Writing Department via the following email address: **TechWriting@cabletron.com** *Make sure to include the document Part Number in the email message.*	

Before calling Cabletron Systems, have the following information ready:

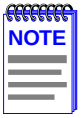
- Your Cabletron Systems service contract number
- A description of the failure
- A description of any action(s) already taken to resolve the problem (e.g., changing mode switches, rebooting the unit, etc.)
- The serial and revision numbers of all involved Cabletron Systems products in the network
- A description of your network environment (layout, cable type, etc.)
- Network load and frame size at the time of trouble (if known)
- The device history (i.e., have you returned the device before, is this a recurring problem, etc.)
- Any previous Return Material Authorization (RMA) numbers

CHAPTER 2
INSTALLATION

Only qualified personnel should install or service this unit.

To install the VHSIM-G6 you need the following items:

- Phillips screwdriver
- Antistatic wrist strap (shipped with the VHSIM-G6)
- Standoff screws (shipped with the VHSIM-G6)



Before attempting to use the VHSIM-G6 you should be familiar with the *IEEE 802.3z* specification. The network installation must meet the guidelines contained in the draft specification to ensure satisfactory performance.

2.1 UNPACKING THE VHSIM-G6

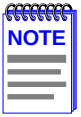
The VHSIM-G6 and the host module or device (platform) are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the VHSIM-G6 or host platform.

Unpack the VHSIM-G6 as follows:

1. Remove the VHSIM-G6 from the shipping box. Leave the module in the antistatic bag until you are ready to install it.
2. Attach the antistatic wrist strap. If the VHSIM-G6 is to be installed in a standalone device, refer to the instructions on the antistatic wrist strap package. If the VHSIM-G6 is to be installed in an interface module, refer to the applicable interface module User's Guide.
3. After removing the VHSIM-G6 from the antistatic bag, visually inspect the device. If there is any sign of damage, contact Cabletron Systems immediately. Refer to Section 1.5 for instructions. Save the antistatic bag in the event the VHSIM-G6 must be reshipped.

2.2 INSTALLING THE VHSIM-G6

You can install a VHSIM-G6 in any Cabletron Systems device that supports VHSIM technology (e.g., 2E253-49R, 6H252-17).



Refer to the release notes for the version of firmware running on the Cabletron Systems device to ensure that the VHSIM-G6 is supported.

The following subsections provide instructions for installing a VHSIM-G6 in an interface module or in a standalone device. Refer to your specific interface module or standalone device documentation for exact VHSIM slot and connector locations.

2.2.1 Installing the VHSIM-G6 in an Interface Module

To install a VHSIM-G6 in an interface module that supports VHSIM technology, perform the following steps:

1. Note the ports of the interface module that have cables attached to them. Write down the ports and label the cables to make it easier to reattach the network properly after the installation. Then disconnect the cables from the ports.
2. Attach the antistatic wrist strap (refer to the instructions outlined in the interface module User's Guide).

The VHSIM-G6 and the host module are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the VHSIM-G6 or host module.

3. If the module is installed in a chassis, unlock the top and bottom plastic locking tabs of the module faceplate, and remove the module from the chassis.

4. Lay the module down with the internal components facing up.
5. Refer to Figure 2-1 and remove the two faceplate mounting screws and the VHSIM coverplate. Save the screws.

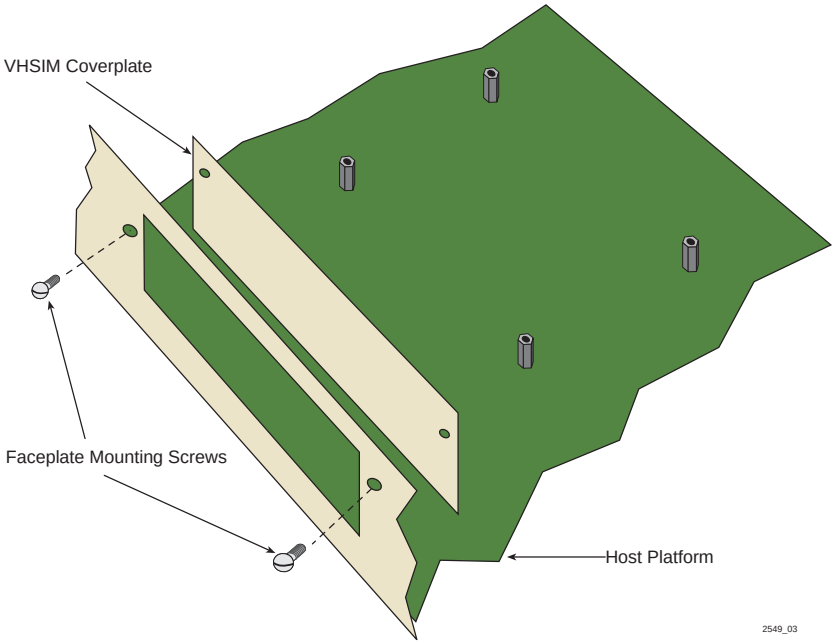


Figure 2-1 Removing the VHSIM Coverplate from the Host Device

6. Refer to Figure 2-2 and position the VHSIM-G6 behind the module faceplate, above the connectors.

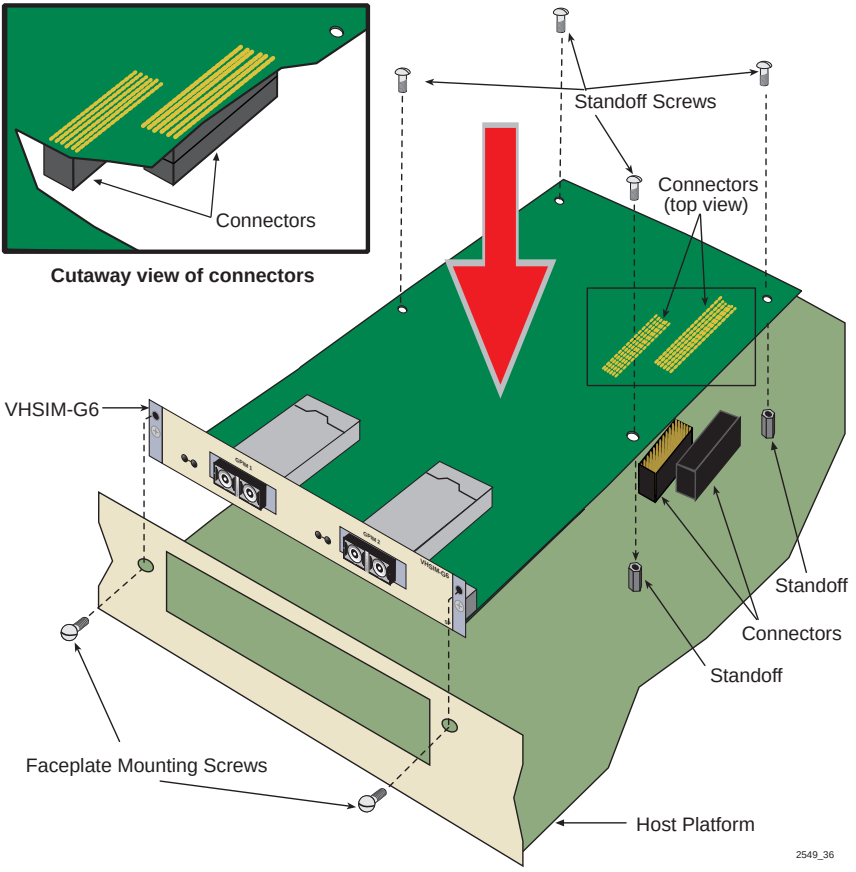


Figure 2-2 Installing the VHSIM-G6 in the Host Device

7. Align the VHSIM-G6 connectors with the VHSIM connectors on the module.

CAUTION

When installing the VHSIM-G6, ensure that the pins on the module align with the connector to prevent bending the pins. This can damage both the VHSIM-G6 and the module.

8. Press down firmly on the VHSIM-G6 until the connectors slide all the way onto the pins. Ensure that the standoffs on the interface module align with the standoff screw holes on the VHSIM-G6.

9. Secure the VHSIM-G6 to the module faceplate using the mounting screws saved in step 5.
10. Secure the VHSIM-G6 to the module standoffs using the standoff screws shipped with the VHSIM-G6.
11. Reinstall the interface module in the chassis.
12. Reattach the network cabling to the interface module.

2.2.2 Installing the VHSIM-G6 in a Standalone Device

To install a VHSIM-G6 into a standalone device (e.g., 2H252-25R) that supports VHSIM technology, perform the following steps:

1. Power down the device and remove the power cord.
2. Note the ports that have cables attached to them. Write down the ports and label the cables to make it easier to reattach the network properly after the installation. Then disconnect the cables from the ports.

To install the VHSIM-G6 in a standalone device, the device must first be powered down. Ensure that you remove the power cord and ONLY the screws required to remove the chassis cover.

3. Attach the antistatic wrist strap (refer to the instructions outlined on the antistatic wrist strap package).

The VHSIM-G6 and the device are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the VHSIM-G6 or device.

4. Remove the standalone device chassis cover. Refer to your specific standalone device documentation for instructions on removing the chassis cover.
5. Refer back to Figure 2-1 and remove the two faceplate mounting screws and the VHSIM coverplate. Save the screws.
6. Refer back to Figure 2-2 and place the VHSIM-G6 module behind the standalone device faceplate.

7. Align the VHSIM-G6 connectors with the pins on the standalone device.

When inserting the VHSIM-G6 onto the device pins, ensure that the pins do not bend, as this can damage both the device and the VHSIM-G6.

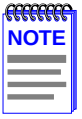
8. Press down firmly on the VHSIM-G6 until the connectors slide all the way onto the pins. Ensure that the standoffs on the standalone device align with the standoff screw holes on the VHSIM-G6.
9. Secure the VHSIM-G6 to the module faceplate using the mounting screws saved in step 5.
10. Secure the VHSIM-G6 to the module standoffs using the standoff screws shipped with the VHSIM-G6.

Ensure that the chassis cover is in place before reconnecting the power cord.

11. Reattach the chassis cover to the standalone device, reconnect the power cord, and reconnect the standalone device to the network.

2.3 INSTALLING GPIMs

The VHSIM-G6 has two different GPIMs that can be installed into the VHSIM-G6. Both GPIMs are installed into the VHSIM-G6 in the same manner, as listed in this procedure.



The GPIMs are hot swappable, therefore they can be installed into the VHSIM-G6 at any time during the installation of the VHSIM-G6.

After installing a GPIM-01 or GPIM-09, refer to Section 2.4 for details on connecting the GPIM to the network.

Refer to Appendix B for cable specifications for the GPIMs.

CAUTION

The GPIM, VHSIM-G6 and the host module or device are sensitive to static discharges. Use an antistatic wrist strap and observe all static precautions during this procedure. Failure to do so could result in damage to the GPIM, VHSIM-G6, or host module or device. Always leave the GPIM in the antistatic bag in which it was shipped or an equivalent antistatic container until ready to install it.

The GPIMs are installed into the VHSIM-G6 as follows:

1. Attach the antistatic strap (refer to the instructions in the antistatic wrist strap package) before removing the GPIM from the antistatic packaging.
2. Remove the GPIM from the packaging.
3. Hold the GPIM with the network connection port facing away from the VHSIM-G6. The 20-pin connector should be facing towards the empty GPIM slot, with the wide part of the connector oriented up in relation to the printing on the VHSIM-G6. See Figure 2-3 to orient the GPIM 20-pin connector.

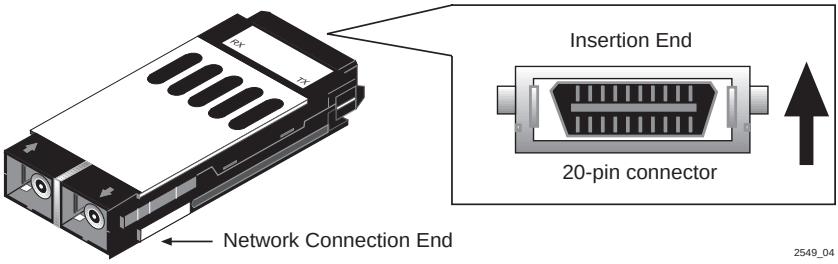


Figure 2-3 GPIM

4. Gently insert the GPIM (20-pin connector side) through the GPIM opening of the VHSIM-G6. See Figure 2-4. The door folds up and the slides engage the sides of the GPIM. If the GPIM does not go in easily, do not force the device. Check the orientation against Figure 2-3. Push the GPIM back until the 20-pin port engages the GPIM. The latch mechanism engages when the GPIM connector seats properly in the port.

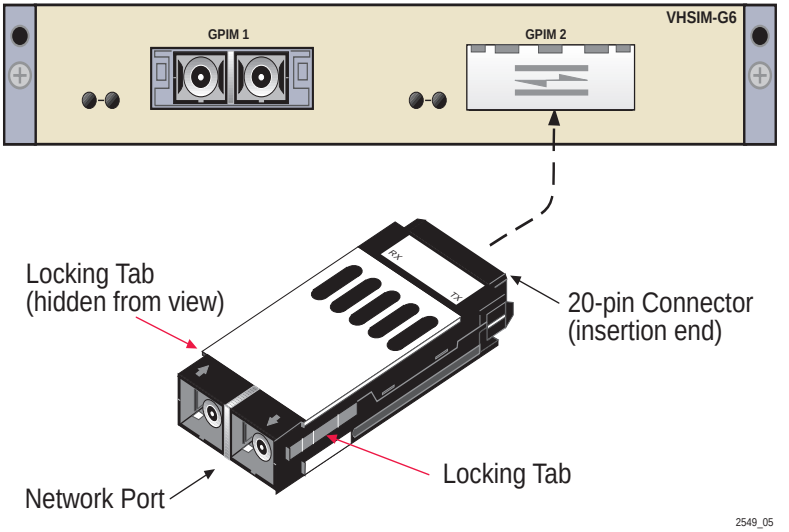


Figure 2-4 Installing a GPIM into the VHSIM-G6

To remove a GPIM from the VHSIM-G6, squeeze both locking tabs in towards the center of the GPIM, and pull it out of the port.

2.4 GPIM-01 AND GPIM-09 NETWORK CONNECTIONS

The GPIM-01 and the GPIM-09 each have an SC style connector for the network port that is used to connect to the Gigabit Ethernet network. Cabletron Systems offers fiber optic cables that use SC style connectors which are keyed to ensure proper crossover of the transmit and receive fibers.

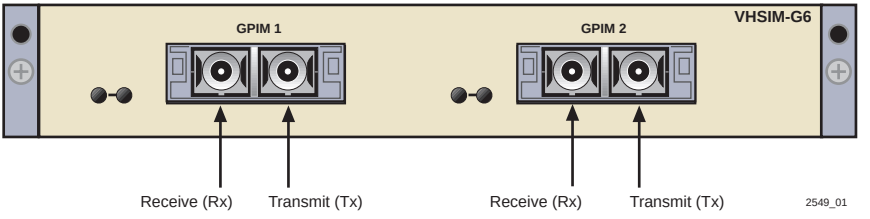
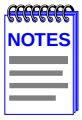


Figure 2-5 VHSIM-G6 Fiber Port Designations

Since the GPIM-01 and GPIM-09 both have the same type of SC fiber connector, the directions for connectivity are the same, except for when the GPIM-09 is connected to multimode fiber. Refer to Section 2.4.1 before connecting the GPIM-09 to multimode fiber.

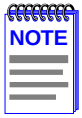
Different size and wavelength fiber cable is used for different applications. The GPIM-09 typically has a blue connector to indicate the long wave length transceiver. The GPIM-01 connector is typically black or beige, for multimode fiber cable. Check the fiber specifications in Appendix B for each GPIM carefully before connecting a GPIM to the network.



An odd number of crossovers (preferably one) must be maintained between like devices so that the transmit port of one device is connected to the receive port of the other device and vice versa.

If the fiber optic cable being used has SC style connectors that do not resemble MIC style connectors, or has SC connectors on one end and a different type on the other, such as ST connectors, ensure that the proper cable cross-over occurs.

2.4.1 GPIM-09 Connection Using Multimode Cable



When using multimode fiber cable for the GPIM-09 (long wave length transceiver), connect Launch Mode Conditioning cable as detailed in the following procedure (Section 2.4.1). The following procedure is not needed when connecting single mode fiber cable to the GPIM-09. Launch Mode Conditioning cables are available from Cabletron Systems.

To connect the GPIM-09 to the network using multimode fiber, perform the following steps:

1. Connect Launch Mode Conditioning cable to the multimode fiber on both ends of the multimode cable, before connecting the VHSIM-G6 with a GPIM-09 to the multimode fiber cabling. See Figure 2-6.

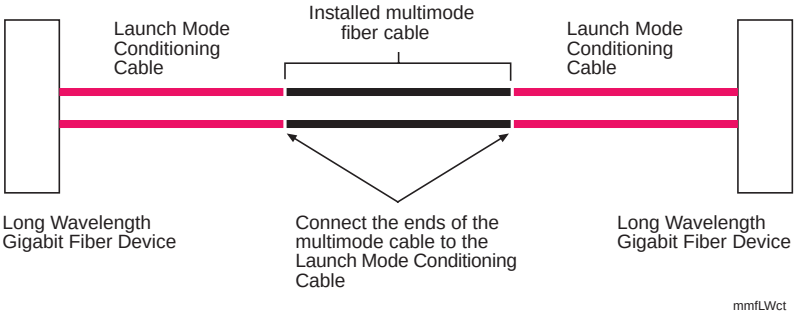
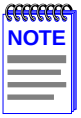


Figure 2-6 GPIM-09 Launch Mode Conditioning Cable Connection

2. Once the Launch Mode Conditioning cable is connected to the ends of the multimode fiber cable, proceed to Section 2.4.2 to complete the installation to the GPIM-09 device.

2.4.2 VHSIM-G6 Network Connection

To connect the VHSIM-G6 using fiber cable to the network, perform the following steps:



If connecting the VHSIM-G6 with a GPIM-09 to the network using multimode fiber cable, refer to Section 2.4.1 before following this procedure.

1. Remove the protective covers from the fiber optic ports and from the ends of the connectors.

The GPIM-01 and GPIM-09 use Class 1 lasers. Do not use optical instruments to view the laser output. The use of optical instruments to view laser output increases eye hazard. When viewing the output optical port, power must be removed from the network adapter.

NOTE

Leave the protective covers in place when the connectors or ports are not in use to prevent contamination.

Do not touch the ends of the fiber optic strands, and do not let the ends come in contact with dust, dirt, or other contaminants. Contamination of the ends causes problems in data transmission.

If the ends become contaminated, blow the surfaces clean with a canned duster. A fiber port cleaning swab saturated with optical-grade isopropyl alcohol may also be used to clean the ends.

2. Insert one end of the SC connector, key side down, into the GPIM-01 or GPIM-09 in the VHSIM-G6. See Figure 2-7. Ensure that the appropriate cable is used for the application of the GPIM. Refer to Appendix B for the appropriate GPIM for the fiber cable used for the installation.

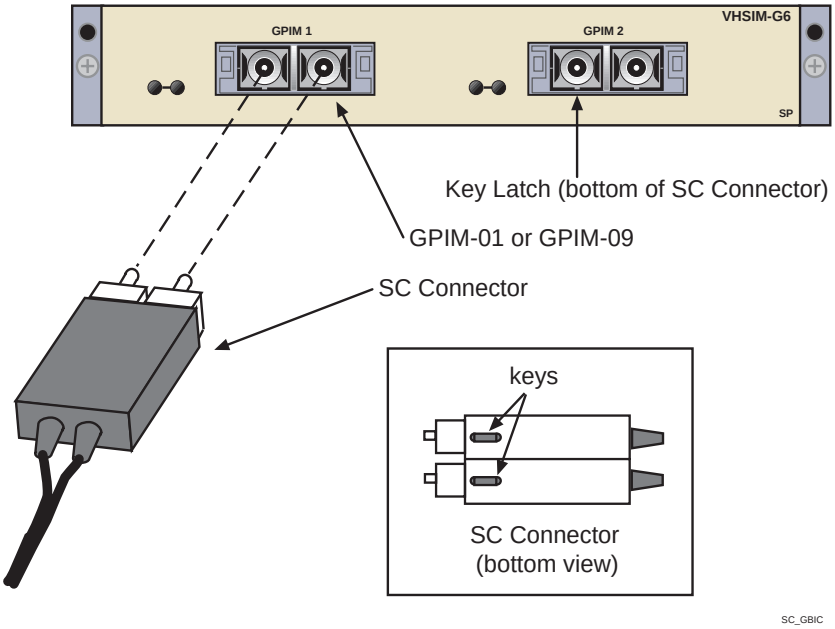


Figure 2-7 Fiber GPIM Connections

3. At the other end of the fiber optic cable, attach the SC connector to the other device. Verify that a link exists by checking that the port **Receive** LED is ON (flashing amber, blinking green, or solid green). Refer to Chapter 3 for details on the LEDs. If the **Receive** LED is OFF and the **Transmit** LED is not blinking amber, perform the following steps until it is ON:

   a. Check that the device at the other end of the link has power turned on and is Gigabit Ethernet compatible.

   b. Verify proper crossover of fiber strands between the port on the VHSIM-G6 and the fiber optic device at the other end of the fiber optic link segment.

   c. Verify that the fiber connection meets the specifications outlined in Appendix B for the installed GPIM.

To remove the SC connector from the GPIM, carefully pull the connector out of the port. It may need to be wiggled gently to release the latching keys.

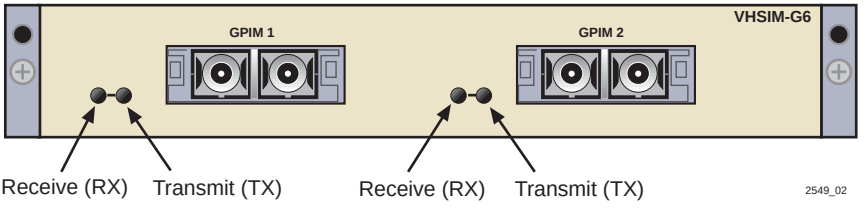


Figure 2-8 VHSIM-G6 with Two Fiber Ports

Refer to Chapter 4 for information on Local Management for the VHSIM-G6. If a link has not been established, refer to Chapter 3 for LED troubleshooting details. Refer to Section 1.5 for details on contacting Cabletron Systems if a problem persists.

CHAPTER 3
LANVIEW LEDs

This chapter describes how to use the LANVIEW LEDs to monitor the VHSIM-G6 status and diagnose VHSIM-G6 problems. Figure 3-1 shows the location of the VHSIM-G6 LEDs. Refer to Table 3-1 for a description of the LEDs. Section 3.2 describes redundancy. This information applies to all types of installed GPIMs.

3.1 LED DESCRIPTIONS

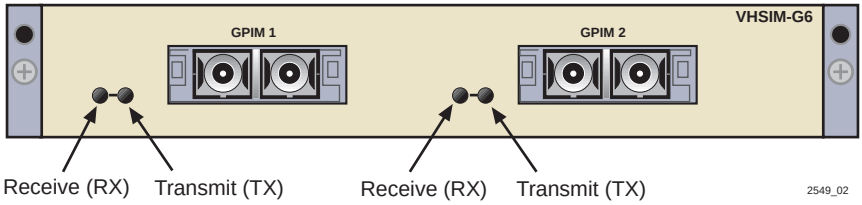


Figure 3-1 LANVIEW LEDs on the VHSIM-G6

NOTE

The terms **flashing**, **blinking**, and **solid** used in Table 3-1 indicate the following:

Flashing indicates an irregular LED pulse.

Blinking indicates a steady LED pulse (approximately 50% on and 50% off).

Solid indicates a steady LED light. No pulsing.

Table 3-1 VHSIM-G6 LED Functionality

LED	Color	Definition
Transmit	Green (Flashing)	Activity, port enabled.
	Amber (Blinking)	Port in standby.
	Off	No activity, port enabled.
	Red (Flashing)	Transmit fault.
	Red	Diagnostic failure.
Receive	Green (Solid)	Link, no activity. Port enabled.
	Green (Blinking)	Link, port disabled.
	Amber (Flashing)	Link, activity. Port enabled.
	Off	No link, no activity. Port enabled or disabled.
	Red	Diagnostic failure.

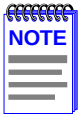
3.2 REDUNDANCY

The VHSIM-G6 supports two modes of operation with the Gigabit interfaces. Both the interfaces can be active, or one can be active and the other redundant. When both interfaces are active, all led descriptions will apply to both ports.

In the redundancy mode, only one of the two ports on the VHSIM-G6 is active at one time. The port with link status showing (either a green LED, solid or blinking, or an amber LED) is the active port. If both ports show a link, GPIM 1 is the active port. The default port for the primary port link is GPIM 1.

CHAPTER 4
LOCAL MANAGEMENT

This chapter provides information about using Local Management with the VHSIM-G6. Since the VHSIM-G6 is a Gigabit Ethernet device, the Local Management screens used for configuration and statistics are the same as those of the host platform.



The host platform is the interface module or standalone device in which the VHSIM-G6 is installed.

4.1 REQUIREMENTS

Make sure that the following requirements have been met before accessing the VHSIM-G6 through Local Management:

- The VHSIM-G6 is installed in the host platform.
- The device is powered up and running with no error LED conditions.
- A Local Management terminal is properly configured and connected to the host platform. Refer to the host platform user's guide to establish a Local Management connection.

4.2 GIGABIT PORT MODE

Local Management Network Tools can be used to change the status of the Gigabit Port Mode. Either both ports can be enabled at the same time, or GPIM port 1 can be active and port 2 can be set up as redundant. Use the Network Tool gigabit_port_mode for this process. Refer to the Local Management documents for details on this process.

Important

The Local Management screens are the ones used by the host platform for both configuration and statistics. These screens will not be repeated in this manual. Refer to the host platform user's guide for detailed explanations of the information that is accessed in the Local Management screens. Refer to Section 1.4 for information on how to obtain host platform manuals for the Local Management information.

APPENDIX A
VHSIM-G6 SPECIFICATIONS

This chapter lists the specifications and regulatory requirements for the VHSIM-G6. Cabletron Systems reserves the right to change these specifications at any time without notice. Refer to Appendix B for specifications for the optional GPIMs.

A.1 PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

Table A-1 Physical Properties of the VHSIM-G6

Dimensions	3.18 H x 16.51 W x 29.21 D (cm) 1.25 H x 6.5 W x 11.5 D (in)
Weight	.35 kg (0.78 lb)
MTBF (Predicted)	7,798,560 hours

Table A-2 Environmental Requirements of the VHSIM-G6

Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 73°C (-22°F to 164°F)
Operating Humidity	5% to 90% (non-condensing)

A.2 REGULATORY COMPLIANCE

This equipment meets the following safety and electromagnetic compatibility (EMC) requirements:

Table A-3 Regulatory Compliance of the VHSIM-G6

Safety	UL 1950, CSA C22.2 No.950, EN60950, IEC950, and 72/73/.EEC
Electromagnetic Compatibility (EMC)	FCC Part 15, CSA C108.8, EN 55022, VCCI V-3, EN 50082-1, 89/336/EEC, and AS/NZS 3548

APPENDIX B
GPIM SPECIFICATIONS

This appendix lists the specifications and regulatory requirements for the GPIMs and the media they use. Cabletron Systems reserves the right to change these specifications at any time without notice. The available GPIM options are the GPIM-01 and GPIM-09. The GPIM-01 and GPIM-09 are both fiber optic devices with an SC connector. The GPIM-01 supports multimode (MMF) fiber cable, and the GPIM-09 supports both multimode and single mode (SMF) fiber cable.

B.1 GIGABIT ETHERNET SPECIFICATIONS

The following specifications for the Gigabit Ethernet GPIMs meet or exceed the IEEE 802.3z specification.

B.1.1 GPIM-01 Specifications (1000Base-SX)

Table B-1 GPIM-01 Optical Specifications

	62.5 µm MMF	**50 µm MMF**
Transmit Power (minimum)	-9.5 dBm	-9.5 dBm
Receive Sensitivity	-17 dBm	-17 dBm
Link Power Budget	7.5 dBm	7.5 dBm

Table B-2 GPIM-01 Operating Range

	Modal Bandwidth @ 850 nm	**Range**
62.5 µm MMF	160 MHz/km	2-220 Meters
62.5 µm MMF	200 MHz/km	2-275 Meters
50 µm MMF	400 MHz/km	2-500 Meters
50 µm MMF	500 MHz/km	2-550 Meters

B.1.2 GPIM-09 Specifications (1000Base-LX)

Table B-3 GPIM-09 Optical Specifications

	62.5 µm MMF	50 µm MMF	10 µm MMF
Transmit Power (minimum)	-11.5 dBm	-11.5 dBm	-9.5 dBm
Receive Sensitivity	-20 dBm	-20 dBm	-20 dBm
Link Power Budget	8.5 dBm	8.5 dBm	10.5 dBm

Table B-4 GPIM-09 Operating Range

	Modal Bandwidth @ 1300 nm	Range
62.5 µm MMF	500 MHz/km	2-550[A] Meters
50 µm MMF	400 MHz/km	2-550[A] Meters
50 µm MMF	500 MHz/km	2-550[A] Meters
10 µm SMF	N/A	2-10000 Meters

A. In order to obtain the distance of 550 m for the GPIM-09 using multimode fiber, Launch Mode Conditioning cable must be used. Refer to Section 2.4.1 for details.

B.2 PHYSICAL AND ENVIRONMENTAL SPECIFICATIONS

Table B-5 GPIM Physical Properties

Dimensions	1.2 H x 3.4 W x 6.5 D (cm) 0.47 H x 1.34 W x 2.56 D (in)
Weight	25 g (0.88 oz)

Table B-6 GPIM Environmental Requirements

Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-30°C to 90°C (-22°F to 194°F)
Operating Humidity	5% to 90% (non-condensing)

B.3 REGULATORY COMPLIANCE

The GPIMs meet the following safety and electromagnetic compatibility (EMC) requirements:

Table B-7 Regulatory Compliance

Eye Safety (fiber GPIMs only)	FDA CDRH 21-CFR 1040 Class 1, IEC 825 Issue 1 1993:11 Class 1, CENELEC EN 60825 Class 1,